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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/940,020	09/29/97	FUKUZAWA	H 04173.0348

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FINNEGAN HENDERSON FARABOW GARRETT
& DUNNER
1300 I STREET NW
WASHINGTON DC 20005-3315

EXAMINER

DAVIS, D

ART UNIT

PAPER NUMBER

2754

DATE MAILED:

02/29/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/940,020

Applicant(s)

FUKUZAWA ET AL.

Examiner

David D. Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2000.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-78 is/are pending in the application.
- 4a) Of the above claim(s) 1-20,24,25,27-46,49-59,66 and 76 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-23,26,47,48,60-65,67-75,77 and 78 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 14) ☐ Notice of References Cited (PTO-892)
- 15) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 16) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 17) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 18) ☐ Notice of Informal Patent Application (PTO-152)
- 19) ☐ Other: _____

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Election/Restriction

1. Claims 1-20, 24, 25, 27-46, 49-59, 61, 66 and 76 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species, the requirement having been traversed in Paper No. 4, filed September 28, 1998.

Claim Rejections - 35 U.S.C. § 112

2. Claims 60, 67 and 77 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, "an underlayer having a thickness of 50 nm or less", includes every thickness up to zero. The specification fails to enable a skilled artisan how to make and/or utilize an underlayer having a thickness approaching zero.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 21-23, 26, 47, 48, 60-65, 67-75, 77 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krounbi et al (US 5,018,037) in view of Chen et al (US 5,733,370). 70, Krounbi et al shows in figure 3d substrate 21 having a main surface. Magnetoresistive (MR) effect film 27 of Krounbi et al is formed on the main surface of substrate 21 and has a magnetic field detecting portion. The pair of hard bias magnetic filed applying films 26 of Krounbi et al are disposed adjacent to both edge portions of the magnetic detecting portion. In column 2, line 56 through column 3, line 11, Krounbi et al discloses that bias magnetic filed applying films 26 have hard magnetic films containing cobalt (Co) as a structural element considered to have a residual magnetization M_r of 650 emu/cc.

Krounbi et al also shows in figure 3 hard magnetic film 26 containing Co as a structural element and it is considered to have Co(110) crystallographic orientation

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oriented perpendicular to the surface. Krounbi et al additionally discloses in column 2, line 56 through column 3, line 11 that hard magnetic film 26 is composed of CoPt or CoCrPt. Bias magnetic field applying films 26 are shown in figure 3d to be abutted against MR effect film 27.

However, Krounbi et al is silent as to bias magnetic field applying films having hard magnetic films containing cobalt (Co) as a structural element being a bi-crystal structure. Krounbi et al is also silent as to upper and lower shields in a combined or merged head having poles. Krounbi et al is additionally silent as to the a spin valve film and an amorphous underlayer.

Chen et al discloses column 3, lines 37-50 magnetic field applying films having hard magnetic films containing cobalt (Co) as a structural element being a bi-crystal structure, and official notice is taken of the fact that upper and lower shields in a combined or merged head having poles, spin valves and an amorphous underlayer are notoriously old and well known in the magnetic head art.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the cobalt magnetic field applying films having hard magnetic films containing cobalt (Co) as structural element of Krounbi et al with a bi-crystal structure as taught by Chen et al.

The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide magnetic field applying films having hard magnetic films containing cobalt (Co) as a structural element with a bi-crystal

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structure to suppress Barkhausen noise in the magnetic head. See column 3, lines 37-50 of Chen et al.

It also would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the magnetic read MR head of Krounbi et al with upper and lower shields in a combined or merged head having poles as taught in the art.

The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a magnetic read MR head with upper and lower shields in a combined or merged head having poles so recording can take place, as well as reproducing.

It additionally would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the magnetic head of Krounbi et al with an amorphous underlayer and a spin-valve layer as taught in the art.

The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a magnetic head with an amorphous underlayer and a spin-valve layer so as to provide a magnetic read head able to read a high density on a magnetic recording medium.

Conclusion

All claims are drawn to the same invention claimed in the parent application prior to the filing of this Continued Prosecution Application under 37 CFR 1.53(d) and could

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have been finally rejected on the grounds and art of record in the next Office action.

Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing under 37 CFR 1.53(d). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is (703) 308-1503. The examiner can normally be reached on Mon., Tues., Thurs. and Fri. between 7:30-6:00.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-9051 for regular communications and (703) 308-9052 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

A handwritten signature in black ink, appearing to read 'D. Davis', with a stylized flourish at the end.

David D. Davis
Primary Examiner
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ddd
February 25, 2000